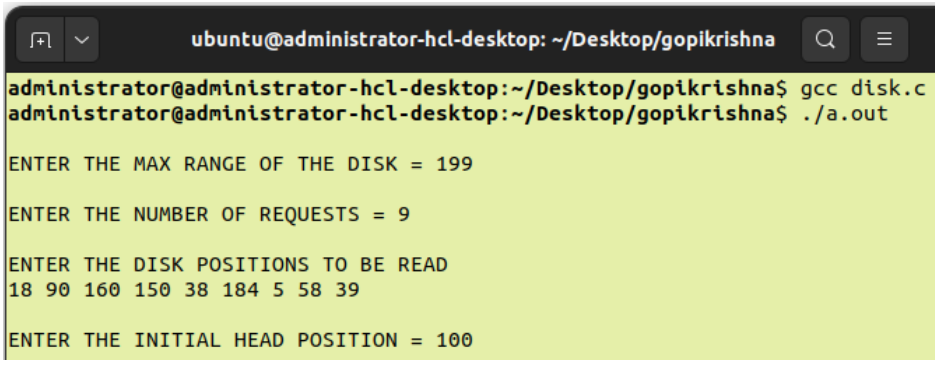
PROGRAM CODE

```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
int range, req, requests[50], head;
void fcfs ();
void scan ();
void cscan ();
void sort (int *arr, int size, int mode);
void seektimeFinder (int *arr, int max);

int main ()
{
	printf ("\nENTER THE MAX RANGE OF THE DISK = ");
	scanf ("%d", &range);
	printf ("\nENTER THE NUMBER OF REQUESTS = ");
	scanf ("%d", &req);
	printf ("\nENTER THE DISK POSITIONS TO BE READ\n");
	for (int i = 1; i <= req; i++)
	{
		scanf ("%d", &requests[i]);
	}
	printf ("\nENTER THE INITIAL HEAD POSITION = ");
	scanf ("%d", &head);
	int choice = 0;
	while (choice != 4)
	{
		printf ("\n1.FCFS\n2.SCAN\n3.C-SCAN\n4.EXIT\nENTER A CHOICE >>> ");
		scanf ("%d", &choice);
		switch (choice)
		{
			case 1:fcfs ();
			break;
			case 2:scan ();
			break;
			case 3:cscan ();
			break;
			case 4:exit(0);
			break;
			default:printf ("\nINVALID");
		}
	}
}

void seektimeFinder (int *arr, int max)
{
	int seek = 0, diff = 0;
	for (int i = 0; i < max - 1; i++)
	{
		diff = abs (arr[i + 1] - arr[i]);
		seek += diff;
		printf ("\nDISC HEAD MOVES FROM %d TO %d WITH SEEK TIME %d", arr[i],
		arr[i + 1], diff);
	}
	printf ("\n\nTOTAL SEEK TIME = %d", seek);
}

void fcfs ()
{
	requests[0] = head;
	seektimeFinder (requests, req + 1);
}

void scan ()
{

	int q1[20], q2[20], k1 = 0, k2 = 0, queue[50], t1 = 0;
	for (int i = 1; i <= req; i++)
		{
		if (requests[i] > head)
		{
			q2[k2] = requests[i];
			k2++;
		}
		else
		{
			q1[k1] = requests[i];
			k1++;
		}
	}
	sort (q2, k2, 1);
	sort (q1, k1, 2);
```

```
        t1 = 1;
        for (int i = 0; i < k2; i++)
        {
                queue[t1] = q2[i];
                t1++;
        }
        queue[0] = head;
        queue[t1] = range;
        t1++;
        for (int i = 0; i < k1; i++)    //then
reverse
        {
                queue[t1] = q1[i];
                t1++;
        }
        seektimeFinder (queue, t1);
}

void cscan ()
{
        int q1[20], q2[20], k1 = 0, k2 = 0,
queue[50], t1 = 0;
        for (int i = 1; i <= req; i++)
        {
                if (requests[i] > head)
                {
                        q2[k2] = requests[i];
                        k2++;
                }
                else
                {
                        q1[k1] = requests[i];
                        k1++;
                }
        }
        sort (q2, k2, 1);
        sort (q1, k1, 1);
    t1 = 1;
        for (int i = 0; i < k2; i++)
        {
                queue[t1] = q2[i];
                t1++;
        }
        queue[0] = head;
        queue[t1] = range;
        t1++;
        queue[t1] = 0;
        t1++;
        for (int i = 0; i < k1; i++)
        {
                queue[t1] = q1[i];
                t1++;
        }
        seektimeFinder (queue, t1);
}

void sort (int *arr, int size, int mode)
{
        int i, j, temp;
        for (i = 0; i < size - 1; i++)
        {
                for (j = 0; j < size - i - 1; j++)
                {
                        if (mode == 1 ? arr[j] >
arr[j + 1] : arr[j] < arr[j + 1])
                        {
                                temp = arr[j];
                                arr[j] = arr[j + 1];
                                arr[j + 1] = temp;
                        }
                }
        }
}
```

OUTPUT



```
1.FCFS
2.SCAN
3.C-SCAN
4.EXIT
ENTER A CHOICE >>> 1

DISC HEAD MOVES FROM 100 TO 18 WITH SEEK TIME 82
DISC HEAD MOVES FROM 18 TO 90 WITH SEEK TIME 72
DISC HEAD MOVES FROM 90 TO 160 WITH SEEK TIME 70
DISC HEAD MOVES FROM 160 TO 150 WITH SEEK TIME 10
DISC HEAD MOVES FROM 150 TO 38 WITH SEEK TIME 112
DISC HEAD MOVES FROM 38 TO 184 WITH SEEK TIME 146
DISC HEAD MOVES FROM 184 TO 5 WITH SEEK TIME 179
DISC HEAD MOVES FROM 5 TO 58 WITH SEEK TIME 53
DISC HEAD MOVES FROM 58 TO 39 WITH SEEK TIME 19

TOTAL SEEK TIME = 743
1.FCFS
2.SCAN
3.C-SCAN
4.EXIT
ENTER A CHOICE >>> 2

DISC HEAD MOVES FROM 100 TO 150 WITH SEEK TIME 50
DISC HEAD MOVES FROM 150 TO 160 WITH SEEK TIME 10
DISC HEAD MOVES FROM 160 TO 184 WITH SEEK TIME 24
DISC HEAD MOVES FROM 184 TO 199 WITH SEEK TIME 15
DISC HEAD MOVES FROM 199 TO 90 WITH SEEK TIME 109
DISC HEAD MOVES FROM 90 TO 58 WITH SEEK TIME 32
DISC HEAD MOVES FROM 58 TO 39 WITH SEEK TIME 19
DISC HEAD MOVES FROM 39 TO 38 WITH SEEK TIME 1
DISC HEAD MOVES FROM 38 TO 18 WITH SEEK TIME 20
DISC HEAD MOVES FROM 18 TO 5 WITH SEEK TIME 13

TOTAL SEEK TIME = 293
1.FCFS
2.SCAN
3.C-SCAN
4.EXIT
ENTER A CHOICE >>> 3

DISC HEAD MOVES FROM 100 TO 150 WITH SEEK TIME 50
DISC HEAD MOVES FROM 150 TO 160 WITH SEEK TIME 10
DISC HEAD MOVES FROM 160 TO 184 WITH SEEK TIME 24
DISC HEAD MOVES FROM 184 TO 199 WITH SEEK TIME 15
DISC HEAD MOVES FROM 199 TO 0 WITH SEEK TIME 199
DISC HEAD MOVES FROM 0 TO 5 WITH SEEK TIME 5
DISC HEAD MOVES FROM 5 TO 18 WITH SEEK TIME 13
DISC HEAD MOVES FROM 18 TO 38 WITH SEEK TIME 20
DISC HEAD MOVES FROM 38 TO 39 WITH SEEK TIME 1
DISC HEAD MOVES FROM 39 TO 58 WITH SEEK TIME 19
DISC HEAD MOVES FROM 58 TO 90 WITH SEEK TIME 32

TOTAL SEEK TIME = 388
1.FCFS
2.SCAN
3.C-SCAN
4.EXIT
ENTER A CHOICE >>> 4
administrator@administrator-hcl-desktop:~/Desktop/gopikrishna$
```